DOCUMENT RESUME

ED 045 186 PS 003 447

AUTHOR Prentice, Norman M.; Bieri, James
TITLE Intellectual Development of Culturally Deprived Children in a Day Care Program: A Follow-Up Study.
INSTITUTION Texas Univ., Austin.
PUB DATE 25 Mar 70
NOTE 12p.; Paper presented at the 47th Annual Meeting of the American Orthopsychiatric Association, San Francisco, California, March 25, 1970
JOURNAL CIT American Journal of Orthopsychiatry; v40 p310-11 1970 (digest of this paper)

EDRS PRICE EDRS Price MF-$0.25 HC-$0.70
DESCRIPTORS Cognitive Development, *Day Care Programs, *Disadvantaged Youth, *Followup Studies, *Intellectual Development, Research Problems, Testing

ABSTRACT

For this followup study an attempt was made to retest all 136 children evaluated in the Austin, Texas Day Care Program nine months earlier but only 95 children were available. Subjects were Negro and Mexican-American. The original study indicated that significantly higher scores were earned on tests of intellectual performance as a function of length of time in program and that "old" children (in program approximately 14 months) gained as many as ten IQ points over "new" children (in program an average of 3 months). Were the old children brighter to begin with or did they have parents more intellectually alert to the benefits of continued participation? To answer this question 57 old children and 38 new children were retested with two well-known, individually administered intelligence tests. Results indicate that those who had been in the program an average of 23 months were to some extent brighter and that upon retesting a slight but significant drop in intellectual level occurred on the Binet. The new children, however, made slight gains between the original and the followup testing which upon closer analysis might be dismissed as artifactual. Differential effects for sex and ethnicity occurred. Five other questions about the relationship of intellectual development to day care are raised by this study and remain unanswered. (Bibliography provided). (WY)

ED045186

U. S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

Intellectual Development of Culturally Deprived Children in a Day Care Program: A Follow-Up Study[1,2]

Norman M. Prentice
University of Texas at Austin

and

James Bieri
University of Texas at Austin

While the critical influence of early childhood experiences on subsequent intellectual growth is generally acknowledged (Hunt, 1960), empirical evidence on the effectiveness of preschool programs in countering the cognitive deficits which many culturally deprived children exhibit is slight (Hodges & Spicker, 1967). Preliminary results (Prentice and Bieri, 1968) from an initial evaluation of intellectual development of culturally deprived children in a traditionally oriented day care program revealed measurable intellectual gains as a function of length of time in the program. In that study, significantly higher scores (averaging about 10 IQ points) on tests of intellectual performance were found in those children who had been in the program an average of 14 months (the "old" child) as compared to a group matched for age (4.9 years) who had been in the program an average of only 3 months (the "new" child). Nevertheless, in interpreting these findings it was possible that those children who remained in the day care program for more than a year were those with greater ability to begin with or those whose parents were a greater source of intellectual stimulation. While exact figures were not available, it was known that one-quarter to one-third of the children initially enrolled dropped out of the program in less than a

PS 003447

---

1 Presented at the 47th Annual Meeting of the American Orthopsychiatric Association, San Francisco, March 25, 1970. A digest of this paper appears in the American Journal of Orthopsychiatry, 1970, 40, 310-311, under the same title. Property of the American Journal of Orthopsychiatry.

year's time. Thus, the old and new groups of children may have differed in important characteristics other than length of exposure to the program. Secondly, the difference in intellectual performance may have reflected a change in the type of family seeking day care for their child initially as opposed to a year later. That is, it seemed not unreasonable that the intellectually alert parents were drawn more readily to the benefits of such a program for their child. Thus, it was possible that the new children, that is those in the program for an average of only 3 months, were those of less intellectually curious or less socially knowledgeable parents who were just becoming aware of the program's availability. In brief, the intellectual differences revealed may have been a function of differences in the two groups of children compared, rather than an effect of the day care program itself. The current study attempted to provide more definitive answers to these possible interpretations through retesting of both the old and new children after an additional nine months participation in the program. In addition to investigating global shifts in intellectual performance, changes in respect to sex, ethnicity, and specific subtest items were examined.

Methods and Procedures

Sample. The Austin Day Care Program, sponsored jointly by federal funds and local community support, provides day care services for over 600 underprivileged preschool children from families with an income rarely exceeding

$3000 and often substantially less. At the time of this study, most of the centers were housed in churches where a teacher and aide often had responsibility for 15-20 children. Some minimal consultation was provided in language training, early childhood education, nutrition, and mental health. The program was largely conducted within a traditional nursery school framework with primary emphasis on social and emotional growth and learning through play. For the follow-up, attempts were made to retest all of the 136 children originally evaluated nine months earlier. However, only 75% of the old children and 65% of the new children were available for retesting. Attrition was due to children graduating to Headstart, chronic sickness or absenteeism, move out of city, or unlocatable for unknown reasons. The final follow-up sample consisted of 57 old children (28 males, 29 females) and 38 new children (21 males, 17 females). Sixty-three of the children were Negro and 32 Mexican-American. Almost all of the former were Protestant, the latter Catholic. (Over 90% of the children in these day care centers during the period of this study were Negro and Mexican-American). In over 40% of the families, the fathers were absent.

(Continued on next page)

Test instruments. For both initial evaluation (Test I) and follow-up (Test II) nine months later each child was administered the Short Form of the Stanford-Binet Intelligence Scale Form L-M (Terman & Merrill, 1960) and the Harris (1963) revision of the Goodenough Draw-A-Man Test (DAM) in that order. For the DAM, the child was asked to draw a man using the instructions indicated by Harris (1963, p. 240). These tests were selected since they have been used traditionally in the intellectual evaluation of children (Terman, 1916; Goodenough, 1926) for more than 40 years. They offer the advantage of recent restandardizations in addition to extensive clinical familiarity (Sundberg,1961). All tests were scored as prescribed by manual.

Test administration. All tests were administered individually at the day care centers by 6 advanced graduate students experienced in child testing. All examiners were white and both tests were administered in English. It was the judgment of the examiners that all Ss had adequate language facility to respond appropriately to testing instructions.

Results

Results from the follow-up study are presented in Table 1. For the old

---
Insert Table 1 about here
---

children, that is those who on retesting had been in the program an average of 23 months, there is no significant change in intellectual performance between Test I (83.1) and Test II (84.0) as measured by the Goodenough-Harris though there is a slight but significant drop in intellectual level (from 91.1 to 88.4, $t = 2.80$, $df = 56$, $p < .01$) as measured by the Binet. For the new children, that is those who had been in the program an average of 12 months on retesting, statistically significant gains between Test I and Test II are found on both the

Binet (from 82.0 to 85.1, $t = 2.16$ $df = 37$, $p < .05$), and more markedly on the Goodenough-Harris (from 73.5 to 81.4, $t = 3.87$, $df = 37$, $p < .001$).

Analysis of sex and ethnicity in relationship to intellectual development revealed some significant differences. With respect to the Binet, within the old children, females lost significantly between Test I and Test II (from 91.1 to 88.2, $t = 2.42$, $df = 28$, $p < .05$), as did Mexican- Americans (92.1 to 87.4, $t = 2.33$, $df = 20$, $p < .03$). Within the new children, males gained significantly between Test I and Test II (from 83.1 to 87.2, $t = 2.42$, $df = 20$, $p < .05$) as did Mexican-Americans (from 74.5 to 82.4, $t = 2.79$, $df = 10$, $p < .03$). With respect to the DAM, no significant differences were found for the old children. For the new children, males showed the most substantial gain (from 71.9 to 83.4, $t = 3.47$, $df = 20$, $p < .02$). Similar results ($p < .02$) were found for Negro males and Negroes. In sum, there were few significant differences as a function of sex and ethnicity, and these few were not generally consistent, apart from a trend for males to show and maintain gains.

Items analyses of Binet performance were conducted within each age level for both old and new groups as a function of sex and ethnicity. Comparisons were restricted to those age levels having substantial numbers of children who attempted items. For this purpose, only Years II through IV-6 could be examined. While 11 significant differences ($p < .05$ from Test I to Test II) are found within the subgroups of the old children, and 12 significant differences ($p < .05$ from Test I to Test II) within the subgroups of the new children, in no case do these differences occur in response to the same subtest items for both old and new children. Within each age group no consistent pattern could be ascertained of those types of cognitive processes showing change. In one of the few similar analyses reported in the literature, Vane, Weitzman, and Applebaum (1966) compared the performance

PS 003447

on subtest items of the Binet by matched groups of white and Negro elementary school children. The overall picture was one of similar test patterning on subtest items except for Vocabulary. In the current study too few children reached the level at which Vocabulary is first tested (Year VI) to allow this comparison.

Discussion

Findings from the follow-up suggest that the more impressive differences of about ten IQ points found in the initial evaluation between the old and new cases was a function to some extent of differences in the samples tested. A more stringent test of intellectual change is provided on the follow-up where the same children are retested after an interval. When the new children alone are examined, improvements in performance while more modest than found initially are still significant (about three IQ points on the Binet and about eight IQ points on the DAM). Such changes have sometimes been dismissed as "artifactual" in the sense that they may reflect increased facility in coping with test materials rather than basic changes in cognitive development. It seems nonetheless clear that such positive shifts following nine additional months of day care suggest improvement in "the child's competence in performing tasks like those he will encounter in his everyday school experiences" (Ziegler and Butterfield, 1967, p. 12).

The follow-up also revealed, however, that the old children not only failed to show further development in their second year but indeed declined slightly on the Binet. Bereiter and Englemann (1966) have maintained that culturally deprived children in a traditional preschool program often seem to reach a plateau in their second year. They contend that continued intellectual growth is observed only in those instances where radical departures from the traditional preschool model have been incorporated. Nevertheless, in view of such factors as the frequently

high ratio of children to teacher, the restrictions on physical environment and on play and learning materials, the limited professional training of some teaching staff together with excessive staff turn-over, the intermittent program funding and so forth, the day care program described cannot be equated realistically with the "ideal" traditional curriculum as exemplified in some university nursery school teacher training programs. That is, comparisons of the relative effectiveness of various curricula for the culturally deprived child can best be interpreted when programs under evaluation differ in methods and procedures alone rather than in adequacy of staffing or materials.

Significance of Findings

A number of significant questions remain unanswered from the present study:

1. To what extent do the intellectual changes observed reflect a response of these children to the day care program as opposed to the course of intellectual development of culturally deprived children generally as they mature?
   The current research cannot answer this question because of the absence of a control group, that is, of a matched group of children who were administered Test I and Test II but did not participate in any intervening day care experience. Future research might well incorporate various types of control groups - for example, one in which the children were not involved in any formal changes in the interim, and a second control group which incorporated some but not all aspects of the day care program (i.e., improved nutrition, and medical care but little or no formal educational programming outside the home).

2. What specific factors within the day care experience contribute and in what measure to cognitive development?

Such factors might range from those which are reasonably indirect (e.g., medical care, nutritional information provided parents, hot meals), to those of intermediate relevance (concern shown by accepting adults in a stabilized protective environment), to those presumptively with more direct cognitive impact (use of pencil and crayons, encouragement of verbalization and critical thinking). The relative importance of such diverse factors cannot be readily differentiated in programs combining them all.

3. Are some types of curricula more effective than others and under what conditions?

The present study has been limited to a traditionally oriented curriculum. Comparison with other types of curricula was not possible, nor did the day care program studied embody the ideal traditional prototype. Very few studies of the comparative effectiveness of various day care curricula have been undertaken. One such study by Weikart and his associates (Weikart & Weigerink, 1968) sought to compare the differential effectiveness of three distinctive curricula with disadvantaged preschoolers: a traditional somewhat permissive program with goals of social and emotional development; a structured curriculum based on cognitive development principles of Piaget; and a language training program which emphasized skill learning, including arithmetic and reading. Preliminary results indicated that the smallest gains on the Standford-Binet were shown by the traditionally oriented program. However, as Weikart noted, since the emphasis of the traditional program was on social growth, changes derived from the curriculum may not have been directly measured by an intelligence test. Whatever the final results of Weikart's study, it remains distinctly possible that various curricula may be differentially effective in respect to age, social class, sex, intelligence or other variables.

4. What are the long range effects of such interventions in subsequent cognitive development?

Few studies have examined these children over a sufficiently long period of time, as for example, through the first five years of grade school to evaluate whether immediate positive intellectual progress in response to day care washes out, or conversely, whether there are sleeper effects which do not become observable until later in the child's academic career. Moreover, such comparisons cannot be justly made unless the subsequent academic exposure of the child is comparable in quality to his preschool experience. It is hardly surprising when the cognitive development of day care children previously exposed to an intellectually stimulating curriculum halts or regresses on enrollment in elementary public schools with programs of lesser quality.

5. How satisfactory are intelligence tests as a criterion of changes induced by day care programs?

Typically research in this area has relied on intelligence tests to measure changes because of their availability, psychometric refinement, and predictive significance for academic success. It should be clear that there may be other critical cognitive or intellective aspects which are tapped slightly if at all in such tests (for example, laterality or directionality). Moreover, it is quite conceivable that most important for subsequent academic learning may be changes along affective dimensions such as self-image, autonomous striving, reduction of separation anxiety, and so forth.

Many additional questions might be posed: is it possible that the child at age 4 is already beyond the peak age for interventions as discussed herein?; is it likely

that more important than the method or the content of a specific curriculum is the devotion and involvement of the teachers in their pupils?; or that more critical than the school curriculum per se are techniques fostering mother-child interactions stimulating growth of specific cognitive dimensions?

In sum, the social need and desirability of day care programs for working mothers as well as for those unable to provide their children appropriate cognitive and affective stimulation for whatever reasons requires no justification. Granting this, however, systematic research can contribute more specifically to maximizing the effectiveness of such programs for the child's cognitive and affective progress, as well as expand more generally our knowledge of normal and deviant child development.

References

Bereiter, C., & Englemann, S. Teaching disadvantaged preschool children. Englewood Cliffs, N. J.: Prentice-Hall, 1966.

Goodenough, F. L. Measurement of intelligence by drawings. Tarrytown-on-Hudson, New York: World Book, 1926.

Harris, D. B. Children's drawings as measures of intellectual maturity. New York: Harcourt, Brace & World, 1963.

Hodges, W. L., & Spicker, H. H. The effects of preschool experiences on culturally deprived children. Young Children, 1967, 23, 23-43.

Hunt, J. McV. Intelligence and experience. New York: Ronald Press, 1960.

Prentice, N. M., & Bieri, J. Intellectual development of culturally deprived children in a day care program. Proceedings of the American Psychological Association, 1968, 3, 599-600.

Sundberg, N. The practice of psychological testing in clinical services in the United States. American Psychologist, 1961, 16, 79-83.

Terman, L. M. The measurement of intelligence. Boston: Houghton Mifflin, 1916.

Terman, L. M., & Merrill, M. A. Stanford-Binet Intelligence Scale. (Manual for the third revision Form L-M). Boston: Houghton Mifflin, 1960.

Vane, J. R., Weitzman, J., & Applebaum, A. P. Performance of Negro and white children and problem and nonproblem children on the Stanford-Binet Scale. Journal of Clinical Psychology, 1966, 22, 431-435.

Weikart, D. P., & Wiegerink, R. Initial results of a comparative preschool curriculum project. Proceedings of the American Psychological Association, 1968, 3, 597-598.

Zigler, E., & Butterfield, E. C. Motivational aspects of changes in IQ test performance of culturally deprived nursery school children. Child Development, 1968, 39, 1-14.

Footnote

2 The authors wish to express their appreciation to Sandra Levy, Beth Weber, and Barbara White, formerly with the Travis County Child Welfare Unit, Austin, Texas, and to Dr. Ira Iscoe, University of Texas, for their support in this study. Grateful acknowledgement is made to Patricia I. MacDonald for substantial assistance in statistical analysis. Thanks are due to the following who served as test examiners: Linda Linville Gotts, George Hayward, Linda Schmechel, Rosalind Steinberg, Mary Tyler and John Tyler.

Table 1

Intelligence Test Scores from Stanford-Binet L-M and Goodenough-Harris DAM for Old and New Children for Test I and Test II

	Binet			DAM		
	Mean	t	p	Mean	t	p
Old - Test I	91.1			83.1		
(N = 57)		2.80	< .01		----	N.S.
Old - Test II	88.4			84.0		
New - Test I	82.0			73.5		
(N = 38)		2.16	< .05		3.87	< .001
New - Test II	85.1			81.4		